

REMARKS

In response to the Official Action mailed June 7, 2002, Applicant amends his application and requests reconsideration. In this Amendment non-elected claim 7 is cancelled as are claims 1 and 5. Accordingly, claims 2-4 and 6 are now pending.

Of the claims now pending, claims 3 and 4 were rejected as indefinite because of their reference to the word "color" and to the term "a color difference". Claim 4 is understood to have been rejected only because it depended from claim 3. Claim 3 has been rewritten in dependent form and now depends from claim 6. The references to "a color" have been changed to reduce the potential for confusion. It is apparent that the terms employed are "color of a laser mark" and "color of the surface of said package". While the second term might be referred to as "surface color" it is more difficult to alter the first term to a similar form. Therefore, only limited amendments have been made. Claim 4 is now dependent from claim 6. However, the rejection as to form with respect to this item of claims 3 and 4 has been overcome by the limited amendment.

Claim 3 was also rejected because of its reference to the color difference "as measured by a colorimeter having a value of at least 10". This expression is not indefinite but follows conventional terminology used by those of skill in the science of color. As well known, colors are compared to each other in an instrument referred to as colorimeter which is a specialized, and sometimes simplified, spectrophotometer. Colorimeters measure colors and particularly differences between colors in a quantitative way by expressing differences between colors as a number, based upon a standard color scale developed 70 years ago and updated 35 years ago and referred to as the CIE scale. [Thus, this color difference stated in claim 3 as a numerical value has a definite meaning for one of skill in the art. Moreover, the patent application itself, beginning at page 4 describes the particular colorimeter that was employed in the work that led to the preparation and filing of this patent application.] Reference to that instrument and its characteristics further demonstrate that claim 3 is not indefinite, but has a clear meaning to one of skill in the relevant art. Therefore, the rejection should be withdrawn as to claim 3.

The Examiner, in the prior art rejection discussed below, stated that claim 4 recites a product-by-process limitation. This statement is incorrect. The Examiner has given an improper interpretation to the claim. To avoid that continued misinterpretation, claim 4 has been amended, without substantive change, explaining that the package contains a dye which provides or contributes to the color of the package. The Examiner must give full consideration to the limitation of claim 4, rather than dismissing that claim as in the Official Action.

All examined claims were rejected as anticipated by Asada (JP 10-204155). This rejection is respectfully traversed.

For the convenience of the Examiner, a partial translation of Asada is attached. This document provides more information than the abstract relied upon by the Examiner in rejecting the claims.

Claim 2 describes an epoxy resin composition including an epoxy resin and a filler. Ten to 15 weight percent of that filler has an average particle size of not more than 10 microns. This composition is different from the composition described by Asada, namely a resin composition containing at least 15 weight percent of a filler with a particle size no more than 5 microns.

[These references may be difficult to compare but when the proper comparison is made, it is apparent that these ranges with regard to the filler, considering size and concentration, do not overlap.] Without the overlap, the rejection for anticipation cannot stand.

Perhaps it is somewhat easier to understand why the ranges specified in Asada and claim 2 do not overlap by stating the ranges in a different way. [In the invention as defined by claim 2, when stating that 10 to 15 % of the filler particles have an average size of no more than 10 microns, it is being stated that 85 to 90% of the filler particles have an average size larger than 10 microns.] Reversing the description of Asada, in that composition, 15 to 85% of filler particles have an average size greater than 5 microns. It is apparent from these revised descriptions, that there can never an overlap in the specified ranges and that the invention employs, on an average, a much larger particle size filler than does Asada.

Of course, if an unrealistic assumption is made concerning the distribution of particle sizes, one could assert that the ranges are identical at one point, namely an 85% concentration. However, this coincidental point could only occur if the Asada composition contained no particles having a size 5 to 10 microns so that the 85% of the particles having a size larger than 5 microns also had a size larger than 10 microns. This presumption is unrealistic because, as known to those of skill in the art, silica filler particles are not available with a specific size or in a distribution of sizes having a sharply defined size range. Rather, the fillers include particles having a continuous size distribution. Particles below or above certain sizes may be removed from a silica filler by floatation, filtering, or other techniques, but even these size selection processes are not totally effective in eliminating all such particles. No technique is available for eliminating particles in a tightly defined size range within the usual wide range of particle sizes.

In the invention, as compared to Asada, a larger proportion of smaller size particles are removed from the filler added to the epoxy resin. While an argument might be made of a theoretical possibility of a single point in the distribution of the invention and in Asada where the ranges just connected but do not overlap, the range of concentration, that argument would be unreasonable because of the scientific facts concerning the distribution of particle sizes in available silica fillers. In other words, because there can be no real world situation in which the

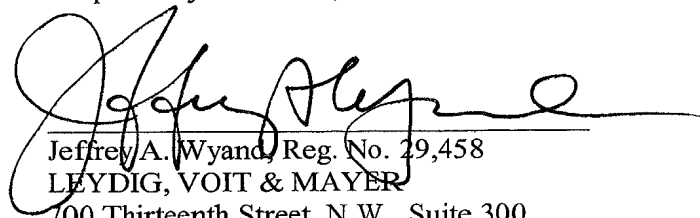
ranges of the invention and Asada overlap, or even contact, there can be no anticipation of claim 2 by Asada so that the rejection must be withdrawn.

Further, there should be no rejection of claim 2 as obvious in view of Asada considered by itself. The criticality of the range specified in claim 2 is established in the discussion in the patent application under the heading "Third Embodiment" from page 8, line 5 through page 10, line 6. Particular attention should be given to the Table appearing on page 9 of the patent application. The Table and the accompanying text demonstrate that while increasing the content of the filler component with an average particle size of no more than 10 microns improves the visibility of laser marks made on the resin composition containing the filler, that the molding characteristics of the composition deteriorate when that filler component exceeds 15 weight percent. Thus, there is a tradeoff between using a smaller size filler to achieve improved visibility of the mark and the consequent increased viscosity as the relative number of larger particles increase. Thus, the patent application demonstrates that the invention as defined by claim 2 cannot be obvious in view of Asada.

Claim 6 is directed to a semiconductor device that includes a semiconductor chip a package of epoxy resin, with the epoxy resin containing a filler having the same characteristics as described with respect to claim 2. Thus, for the same reasons that Asada cannot anticipate nor make obvious claim 2, Asada cannot anticipate nor make obvious claim 6 nor its dependent claims 3 and 4. The arguments made with respect to claim 2 are not repeated with regard to claim 6, but are asserted and incorporated by reference.

In view of the foregoing remarks, upon reconsideration, all remaining claims should be allowed.

Respectfully submitted,



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PATENT
Attorney Docket No. 401171/Fukami

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

FUMIAKI AGA

Application No. 09/838,161

Art Unit: 2827

Filed: April 20, 2001

Examiner: L. Cruz

For: EPOXY RESIN ENCAPSULATING
SEMICONDUCTOR CHIP AND
MARKED RESIN ENCAPSULATED
SEMICONDUCTOR CHIP

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AMENDMENTS TO SPECIFICATION, CLAIMS, AND ABSTRACT
MADE IN RESPONSE TO OFFICE ACTION DATED JUNE 7, 2002

Amendments to existing claims:

Cancel claims 1, 5, and 7.

3. (Twice Amended) ~~A~~ The semiconductor device ~~including: a semiconductor chip; a package of an epoxy resin encapsulating said semiconductor chip; and a laser mark printed on a surface of said package~~ according to claim 6, wherein a color difference between a color of said a laser mark on a surface of said package and a color of the surface of said package where the laser mark is not present, as measured by a colorimeter, has a value of at least 10.

4. (Amended) The semiconductor device according to claim ~~3~~ 6, wherein said package ~~is colored with~~ includes a dye providing the color of the surface of said package.



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**PENDING CLAIMS AFTER AMENDMENTS
MADE IN RESPONSE TO OFFICE ACTION DATED JUNE 7, 2002**

2. An epoxy resin composition that seals a semiconductor chip, said epoxy resin composition including an epoxy resin and a filler that fills said epoxy resin, wherein said filler contains from 10 to 15 wt%, with respect to total filler, of a filler component having an average particle size of no more than 10 μm .

3. The semiconductor device according to claim 6, wherein a color difference between color of a laser mark on a surface of said package and color of the surface of said package where the laser mark is not present, as measured by a colorimeter, has a value of at least 10.

4. The semiconductor device according to claim 6, wherein said package includes a dye providing the color of the surface of said package.

6. A semiconductor device including:
a semiconductor chip;
a package of an epoxy resin encapsulating said semiconductor chip; and
a filler that fills said epoxy resin, wherein said filler contains from 10 to 15 wt%, with respect to total filler of a filler component having an average particle size of no more than 10 μm .